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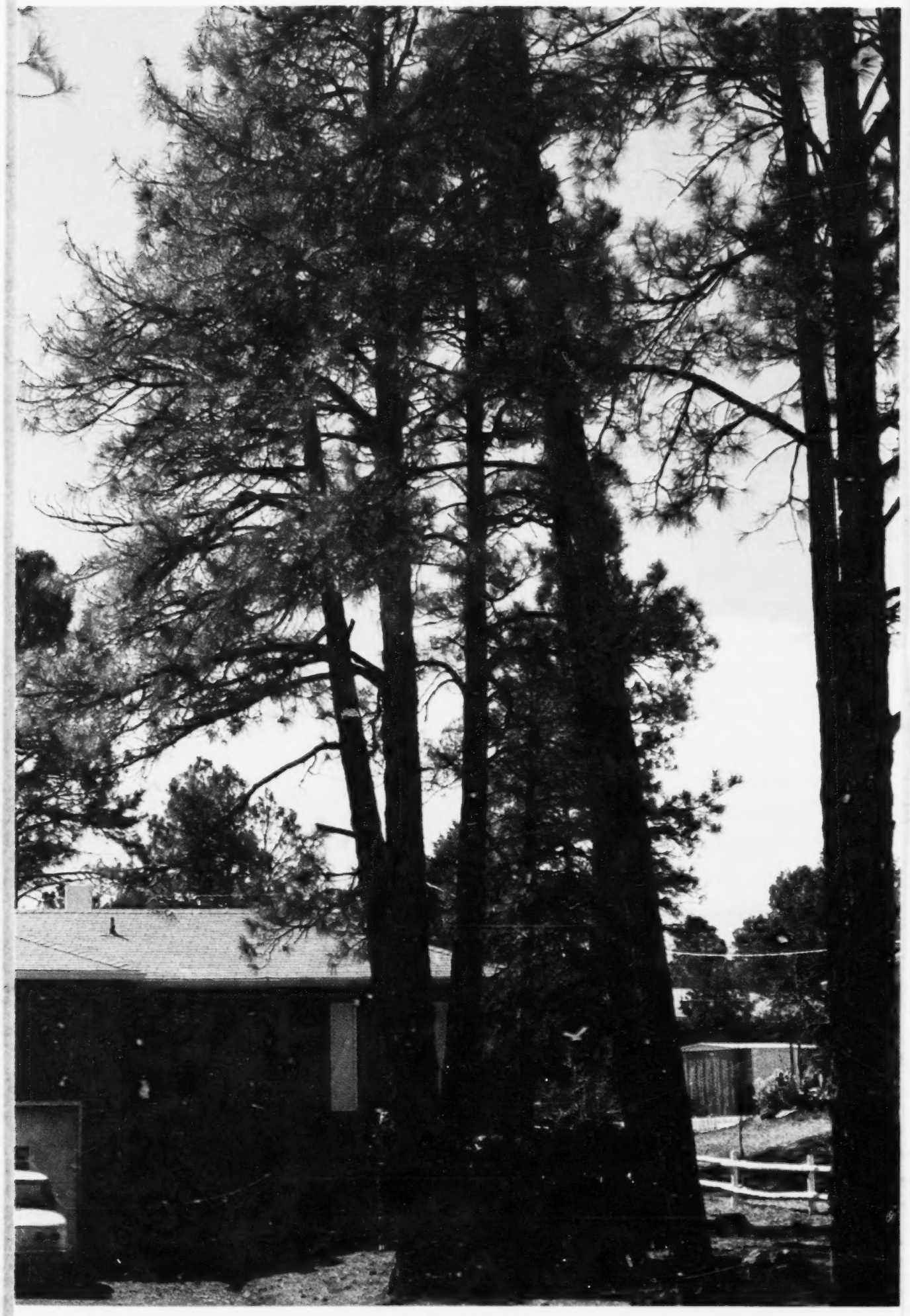
Engraver Beetles in Southwestern Pines

by Jill L. Wilson



United States Department of Agriculture

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Southwestern Region

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Several species of engraver beetles (Ips spp.) are destructive pests in pine forests in the Southwest. Some years, these insects can kill thousands of pinyon pine and small ponderosa pines in Arizona and New Mexico. Occasionally, they attack and kill the tops of larger ponderosas. The most damaging outbreaks are often caused by human activities that create large amounts of fresh pine debris or that weaken trees. The loss of valuable trees at homesites or in recreation areas often causes the most concern.

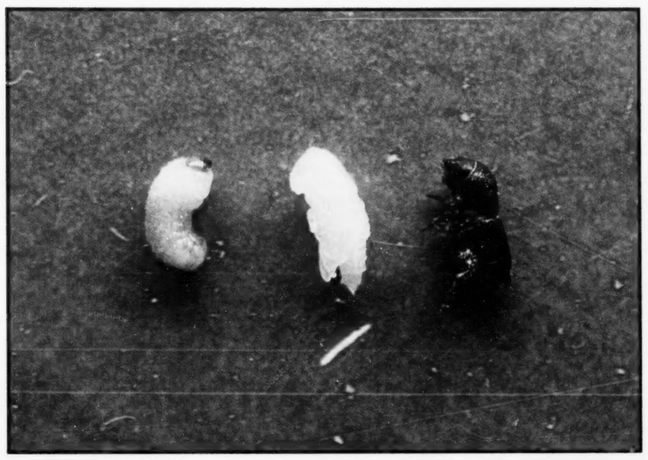
These insects are native to the Southwest and they normally play a beneficial role in pine ecosystems. They act as natural thinning agents preying upon widely scattered trees that have been weakened or recently killed by other factors. They are among the first organisms to attack pines damaged by fires, severe wind storms, or heavy snow storms. They begin the lengthy decomposition process that returns this material back to the soil. Also, a variety of wildlife feed on these beetles and beetle-killed trees are often used for nesting sites. Nevertheless, they are considered pests when they kill trees people want to preserve.

Life Cycle

Beetles produce two to four generations per year, depending on climate and elevation. In the spring, adult beetles emerge from material infested the previous fall and fly to attack new hosts. Beetles prefer fresh debris from logging, construction activity, or natural events. During outbreaks, live trees may be attacked, especially those located adjacent to fresh slash. Trees weakened by drought, disease, overcrowding, or mechanical damage are most vulnerable to attack. Males initiate attacks and release chemical messengers to attract females. Adult beetles create tunnels under the bark called "egg galleries."

Egg Gallery

Females lay eggs alongside their galleries. White, grublike larvae hatch and feed in their own larval tunnels for a few weeks before pupating. Pupae turn into adults that emerge again to complete the cycle, which can last a month or more depending upon temperature. Several overlapping generations may occur through the summer and fall until colder temperatures return. The last generation of beetles overwinters as adults under the bark.



Life Stages

Beetles carry fungi on their bodies. These fungi, often called blue-stain fungi, grow in the wood and clog the tree's water conducting system. Tree death results from rapidly spreading fungi and beetles' girdling activity as they build their galleries.

Evidence Of Infestation

Fading foliage high in the tree is often the first sign of a beetle attack.

Needles change from green to a light straw color within a few weeks after attack and eventually become yellowish-brown. Upon closer inspection, a fine boring dust can be seen in bark crevices and at the base of the tree.

Dying Tree

Occasionally, small pitch tubes (globules of pitch) appear on the trunk of live trees that have been attacked. Removing the bark will reveal the characteristic galleries.

Boring Dust on Infested Tree

Prevention

Prevention is the best way to reduce losses due to engraver beetles. Healthy trees usually are not attacked, but trees stressed by diseases and overcrowding are prone to attack. Treating stands or individual trees to reduce levels of dwarf mistletoe or relieve overcrowding can effectively reduce future losses.

When construction is planned in an area, there are several preventive measures that will reduce the risk for losses:

1. Avoid root damage by minimizing road or lot grade changes and place trenches for underground utilities away from tree roots.

2. Asphalt should not be laid close to tree trunks or over root systems.

3. Under existing pines, avoid planting vegetation that requires much water—such as lawns—because overwatering can harm the pines.

In areas where trees are being cut, schedule activities during late summer and fall. This allows debris to dry and become less suitable for beetles. Cutting debris (tree tops and large limbs) into shorter pieces and scattering them in sunny sites can speed drying. Destroying debris by chipping it or removing it from the forest can also prevent problems. Tree cutting programs that create large amounts of debris should not be conducted for more than one year in

the same area, especially when conditions favor beetle outbreaks, such as during droughts.

Valuable trees near homes or in recreation areas may be given a protective residual bark spray of carbaryl (Sevin) to prevent successful attack. Both the trunk and large branches should be sprayed. Attacking beetles die as they attempt to chew through the bark. This treatment can be effective when trees are weakened or threatened by a temporary beetle outbreak. Preventive bark sprays are not recommended for trees already attacked or affected by serious disease problems or severe injuries.

Control

Several control methods are available if a potentially serious infestation is detected in pine debris and some type of control is necessary. Infested material may be burned or buried within 30 days of initial attack. If burning is unsafe or if material is desired as firewood, trunk and limb sections can be piled in a sunny opening and covered with heavy clear plastic sheeting. All protruding branches should be trimmed and the edges of the plastic buried. The plastic will act as a greenhouse and the high temperatures will kill most of the developing brood under the bark. The plastic should be left on for four to six weeks. Removing the bark from infested trees also will kill most stages of the insect, but is not recommended when many adult beetles are present, especially in late spring.

Homeowners should avoid collecting firewood infested with engraver beetles, which can emerge from the firewood and kill live ornamental pines. Firewood can be treated by covering piles with clear plastic as previously described.

Specific chemical recommendations are given here with caution. Always check the pesticide label to be certain it is registered for use on the site to be treated. Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels. Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed. It is a violation of federal law to use any pesticide in a manner inconsistent with its labeling. County agricultural agents, state extension specialists, and state and federal pest management specialists can be consulted for current information on available insecticides.

Trade names listed in this publication are given solely to provide specific information and are not intended as a recommendation, guarantee, or warranty of the product.

For more information about engraver beetles, contact:

State and Private Lands

Arizona

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Division of Forestry
1616 West Adams, Rm. 100
Phoenix, AZ 85007
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New Mexico

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EMNRD Forestry Division
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Federal Lands

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USDA Forest Service
Forest Pest Management
2323 E. Greenlaw Lane
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